BUILDING THE NEXT-GENERATION X-RAY LIGHT SOURCE
Advanced Photon Source Upgrade Project

Upon completion of the upgrade, the Advanced Photon Source (APS), a U.S. Department of Energy Office of Science User Facility at Argonne National Laboratory, will be a global leader among the next generation of storage-ring based X-ray light sources. The APS Upgrade will allow researchers to see things at scales they’ve never seen before with storage-ring based X-rays. The extreme level of detail will open new frontiers and lead to breakthroughs in basic science which will help solve pressing problems across a wide range of scientific industries.

DID YOU KNOW?
☐ Once complete, the upgraded APS will be the nation’s brightest high-energy, storage-ring based X-ray source delivering X-ray beams that will be up to 500 times brighter than today’s light source.
☐ Today’s X-ray beams produced at the APS are one billion times brighter than the X-rays produced in a typical dentist’s office.
☐ Accelerated electrons move through the 1.1-kilometer X-ray storage ring at nearly the speed of light.
☐ Every year, more than 5,500 researchers from almost every U.S. state, Washington, D.C., and countries around the world conduct experiments at the APS.
☐ The APS is a prolific source of scientific output, it’s users contributing to more than 24,000 peer-reviewed journals since operations began in 1996.
☐ $815 million is being invested to upgrade the APS.

RESEARCH PRIORITIES
Future pivotal discoveries and scientific opportunities enabled by the APS Upgrade will be endless and may include:

- Converting sunlight into energy and storing it using revolutionary systems
- Developing cleaner, more efficient biofuels
- Detailing mechanisms by which pollutants move through soil
- Transforming our understanding of the structure of the Earth’s core
- Developing new drugs to treat infections resistant to today’s antibiotics
- Improving our understanding of how the brain processes and stores information using neurons

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